

Chapter 2. Transportation Metrics Report

This chapter was prepared by the Audit and Evaluation Division (formerly the Center for Policy and Program Analysis) and is an attempt to bring together all the transportation data collected by the city to evaluate progress relative to the objectives of the TMP. This chapter is comparable to and replaces the Transportation Metrics Report produced in 1998. Due to the necessary delay in producing this report, information from both 1999 and 2000 are included where available.

a. Summary

The Transportation Master Plan Update of 1996 (1996 TMP) provides the policy basis for the focus of transportation funding and the investments provided by the City for its citizens. It establishes goals designed to help the transportation system in Boulder respond to the broad values and expectations of the community.

Based on these goals, there are four specific objectives identified in the 1996 TMP to support these goals:

- < To keep vehicle miles traveled in the Boulder Valley at 1994 levels
- < To reduce SOV travel by residents to 25 percent of trips
- < To continually reduce mobile source emissions of air pollutants
- < No more than 20 percent of roadways congest (at Level of Service "F")

As objectives, these items are measurable in various ways and are the focus of the summary section of this chapter.

Since 1998, the Audit and Evaluation Division has been contracted by the Transportation Division to gather the existing data being collected about transportation in Boulder into a single document, the metrics report. The purpose of the metrics report is to annually monitor a number of indicators that provide information on progress toward achieving TMP objectives. It should be noted that the report has attempted to bring together indicators drawn from a wide range of sources which give different levels of information about the objectives. Some of these indicators may give full information about an objective, others of necessity only reveal part of the picture. For example, while it is an objective to reduce non residents' proportion of SOV trips, we do not have a reliable way of sampling all non-residents who travel in Boulder. However, A&E regularly surveys employees in the Boulder Valley, some of whom are non-residents traveling to Boulder to work. Data about the commuting habits of these non-residents is provided in the report as a partial measure of the travel trips made by non-residents. Descriptions of the indicators used, the types of information they represent, and the sources from which they are derived can be found in the sections, "Data Sources" and "Understanding the Data" on pages 19-20 in the body of this report.

Highlights of the report's results are described on the following pages under the TMP objectives shown.

i. To keep vehicle miles traveled in Boulder Valley at 1994 levels:

Although estimated daily vehicle miles traveled (VMT) in Boulder has increased somewhat since 1994, the rate of increase has dropped significantly to less than 2 percent per year, compared to higher VMT increases between 1990 and 1994.

- Between 1990 and 1994, estimated vehicle miles traveled per day in Boulder increased about 3 percent annually, from 2.19 million to 2.45 million miles per day. Between 1994 and 2000, estimated VMT rose to 2.61 million miles per day, an average annual increase of 2.1 percent per year.
- Both the number of trips made daily and the length of trips by Boulder residents using any mode increased between 1990 and 1996, as found in the biannual Travel Diary study. Since then, both the number and length of trips taken by residents has remained at about the same level.
 - N Average miles traveled per day per resident was 24.3 in 1990 and 26.9 in 1994. In 1996, the average daily miles traveled per resident using any mode rose to 27.8, and has remained between 26 and 27 miles per day in the last two survey years.
 - N Average trip length in 1990 was 4.0 miles per day per resident increasing to 4.6 in 1994. Between 1994 and 1996, trip length increased slightly to 4.7 miles per day per resident, but decreased in 1998 and in 2000 to 4.3, below the 1994 level.
- Vehicle trips entering or leaving Boulder totaled about 217,939 in 1994. This number grew to 263,825 in 2000, an average annual increase of 3.5 percent per year. Between 1999 and 2000, the rise was 7.7 percent (from 246,245 trips in 1999), a significantly higher rate of growth than for any previous individual year.
- Traffic volume, as measured at 27 locations throughout the area, increased within the Boulder Valley from 617,012 in 1990 trips per day to 713,387 trips per day in 1994, an annualized rate of about 4 percent per year. In 2000, the number of trips per day was reported as 759,693 yielding an average annual increase between 1994 and 2000 of only 1.1 percent.
- According to the Travel Diary study, the average number of trips per day made by Boulder residents **using all travel modes** increased from 5.9 trips per day in 1990 to 6.1 in 1994, an average increase of less than 1 percent annually. The average number of trips per day by residents rose to 6.2 trips per day in 1996 but dropped in 1998 to the 1990 level of 5.9 and returned to 6.2 trips per day in 2000.

ii. Reduce SOV travel to 25 percent of trips:

Despite the increases in estimated VMT, the proportion of drivers traveling in single-occupancy vehicles (SOV) decreased between 1990 and 1994, and SOV use continued to decline between 1994 and 1999.

- Among Boulder residents, SOV trips as a proportion of trips by all modes decreased from 44 percent in 1990 to 41 percent in 1994, as reported in the Travel Diary study. In 2000, resident SOV mode share was 42 percent.
- Among all employees, as recorded in the Boulder Valley Employee Survey, the mode share of SOV commute trips fell from 73 percent in 1991 to 74 percent in 1999 with a slight drop in 1997 to 68%. Resident commuters' SOV travel, as a proportion of all modes used, decreased between 1991 and 1999 from 65 percent to 61 percent while for nonresident

employees, the SOV modal share stood at 85 percent in 1999 compared to 81 percent in 1991.

As might be expected, the modal share of alternative modes has increased somewhat with the reduction in the proportion of SOV use. These increases were primarily in the use of public transit. The following changes in mode share have been recorded:

- Use of transit has increased among commuting employees in Boulder at a faster rate than among residents of Boulder in general.
 - N As reported in the Travel Diary, the percent of resident trips made by transit (as a proportion of trips by all modes) was about 2 percent in 1990, 3 percent in 1994 and to 4% in 2000. In the same studies, the percent of all resident's commute trips made by transit was 6 percent in 1994, increasing to 9 percent in 2000.
 - N Resident employees' commute trips by transit, according to the Boulder Valley Employee surveys, rose from 2 percent of all trips in 1991 to 4 percent in 1999. The proportion of nonresident employees' commuter trips made by transit rose from 1 percent to 5 percent between 1991 and 1999.
- Bus ridership information also shows consistent increases in transit use in Boulder.
 - N Average weekday bus ridership on RTD regional buses that serve Boulder increased from 5,173 per day in 1990 to 6,862 per day in 1994, rising annually by 8.2 percent. In 1999, the average weekday ridership on these buses was 8,345 trips per day, an average annual increase of 6.8 percent per year over period from 1994 to 1999.
 - N Average weekday ridership on local RTD buses rose almost 17 percent per year between 1990 and 1994 (from 6,041 to 10,127 trips per day). Between 1994 and 1999, ridership on local RTD buses (including the SKIP) has increased by an annual average of 3.6 percent per year (from 10,127 to 11,986 average trips per weekday).
 - N HOP ridership has risen from an average of 3,295 riders per weekday in 1995 to 3,494 riders per average weekday in 1998, an average annual increase of 2.0 percent.
- Use of bicycles by Boulder residents for general travel has remained about the same since 1990 while bicycle use for commuting to work has risen slightly in 2000.
 - N Information from the Travel Diary shows that the mode share of bicycle use for all trips by Boulder residents increased from 9 percent in 1990 to 11 percent in 1994, dropped to 8 percent in 1998 and went to 10 percent in 2000. The proportion of bicycle trips by residents for commuting has remained about the same between 1990 and 1998 (fluctuating around 10 to 11 percent) but increased in 2000 to 16 percent.
 - N As reported in the Boulder Valley Employee Surveys, the modal share of bicycle use for commuting by Boulder resident employees remained steady from 1991 to 1997 at around 16 percent. In 1999, it declined slightly to 13 percent. As might be expected, the bicycle use for commuting by non-residents has remained low, about 1 percent of modal share.
- The modal share of walking trips by residents reported in the Travel Diary has remained

about the same between 1990 and 2000. The modal share of commuter trips made by walking as reported in the Boulder Valley Employee surveys, while increasing between 1991 and 1997, decreased slightly from 1997 to 1999.

- N The percent of all resident trips made by walking was about 18 percent in 1990 and rose to about 20 percent in 2000. Resident commuter trips made by walking were about 9 percent of all modes in 1990 and stood at 10 percent in 2000 (Travel Diary).
- N Among employees who were residents, walking increased slightly as a commute mode from 6 percent in 1991 to 10 percent in 1997 but dropped back to 6 percent in 1999. Among non-residents, as might be expected, the proportion of walking trips was almost zero in all survey years (Boulder Valley Employee Survey).

iii. No more than 20 percent of roadways congested (at Level of Service F)

"Level of service" (LOS) refers to the amount of congestion on the roadway; LOS categories range from "A" at free flow of traffic, to LOS "F," the most severe congestion.

- Based on transportation modeling, in 1990 10 percent of lane miles in Boulder were at level of service F; this increased to 17 percent in 1994.
- Using a new measurement program derived from counts from signalized intersections, the Transportation Division has provided an initial report on service levels at Boulder intersections in 1999. LOS analyses on all signalized intersections in the city of Boulder, for the AM, Noon and PM peak hours of operation shows 7 percent are operating at E or F during the AM peak; 9 percent are operating at E or F during the Noon peak; 21 percent are operating at E or F during the PM peak.
- The effects of traffic congestion have also been measured since 1990 by the Drive Time study which measures travel times on two major north/south thoroughfares (Broadway and 28th Street) and two major east/west thoroughfares (Valmont and Arapahoe) during peak travel times (on weekdays at 7:30 am, 12:00 noon and 5:00 pm).
- N On the north/south streets (Broadway and 28th), travel times increased less than 2 percent per year from 1990 to 1994. Between 1994 and 1998, travel times on 28th Street increased about 1 percent per year, while travel time on Broadway decreased by less than 1 percent annually.
- N On the east/west roads (Arapahoe and Valmont), travel times on Arapahoe increased almost 5 percent per year from 1991 to 1993, and decreased about 1 percent per year from 1993 to 1999 (from an average of about 11 minutes 3 seconds in 1993 to about 10 minutes 23 seconds in 1999). On Valmont Road, travel times increased almost 4 percent annually between 1991 and 1993, but remained under 1 percent per year between 1993 and 1999.

iv. Continually reduce mobile source emissions of air pollutants

Measurement of air pollutants reveals a steady decline in carbon monoxide emissions while particulate matter has remained about the same or increased slightly between 1990 and 2000.

- Two types of emissions from mobile sources, particulates and carbon monoxide, are

estimated for the Transportation Division for a typical winter day. Estimated carbon monoxide emissions have declined between 1994 and 2000 at a rate of 6.4 percent per year. Particulates, as measured in tons of PM₁₀ (particulate matter less than 10 microns) emitted from mobile sources on a typical winter day, increased about 1 percent per year between 1994 and 2000.

- Air quality indicators as measured by the Colorado State Health Department generally have been improving in Boulder since 1990. Carbon monoxide (measured in parts per million) has decreased at an annualized rate of about 4 percent per year between 1990 and 1999. PM₁₀ (particulate matter less than 10 microns) has fluctuated over the period (between 13.2 ppm and 28.5 ppm) but was slightly lower in 1999 (23.0 ppm) than in 1990 (24.7 ppm).